

## SCIENTIFIC COMMUNITY

## Racial attention deficit

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Despite efforts toward equity in organizations and institutions, minority members report that they are often ignored, their contributions undervalued. Against this backdrop, we conduct a large-sample, multiyear experimental study to investigate patterns of attention. The findings provide causal evidence of a racial attention deficit: Even when in their best interest, White Americans pay less attention to Black peers. In a baseline study, we assign an incentivized puzzle to participants and examine their willingness to follow the example of their White and Black peers. White participants presume that Black peers are less competent—and fail to learn from their choices. We then test two interventions: Providing information about past accomplishments reduces the disparity in evaluations of Black peers, but the racial attention deficit persists. When Whites can witness the accomplishments of Black peers, rather than being told about them, the racial attention deficit subsides. We suggest that such a deficit can explain racial gaps documented in science, education, health, and law.

## INTRODUCTION

Despite the long struggle to promote diversity and create equity, racial disparities continue to disfigure the core institutions of society. From policing to housing and medical care and from our criminal justice system to our universities and research institutes, minorities confront bias in treatment and access. Alongside inequalities in income, education, and health, there is also a disparity in attention. By investigating the patterns of who pays attention to whom, our study provides evidence of a racial attention deficit: Even when in their self-interest, Whites pay less attention to Black peers. Specifically, White Americans rate Black peers as less competent than White ones and are less likely to follow their example as a guide to making a better decision. The findings corroborate qualitative evidence that Blacks are more likely to be overlooked or underestimated (1, 2). Racial attention deficit provides a behavioral mechanism that can explain the gaps documented in science, education, health, and law (3–9)—gaps that are not easily explained by extant theories of racial discrimination. As we discuss, racial attention deficit is distinct from other forms of discrimination, and it carries essential consequences for organizations and society.

We test two remedial interventions: When we provide information about prior accomplishments of Black peers, White participants rate them as equally skillful but remain hesitant to learn from their choices. In contrast, when Whites can experience the ongoing accomplishments of Black peers, the exposure not only changes attitudes but also closes the attention deficit. The findings suggest that measures to establish ongoing, experiential recognition can marshal racial diversity as a resource for learning in organizations.

## Squandered learning opportunities

Learning from others can be valuable. Sometimes, such learning requires that one recognizes the limits of their viewpoint and acknowledges that others may have better information. As organizations in many fields are becoming less homogeneous, racial diversity adds new perspectives, offering more opportunities for potential learning. Yet the evidence points to a racial disparity in attention. These patterns are observed across individuals and disciplines even

in science, where recognizing the limitations of one's viewpoint is so fundamental to the scientific endeavor. This is evidenced by a recent analysis of 1.2 million doctoral dissertations: Although researchers from underrepresented groups produce higher rates of scientific innovation, their novel contributions are devalued: taken up at lower rates and less likely to result in successful scientific careers than for majority groups (3).

Similar patterns emerge in questionnaires, interviews, and personal accounts (10–12). Black university students report that White peers are reluctant to collaborate with them on classroom projects, and professors are less likely to invite them to work on research (13). A survey of thousands of medical school faculty revealed that underrepresented minorities reported worse perceptions of inclusion and connection (14). Similarly, a survey of some 9200 economists found that 83% of Black respondents did not agree that “people of my race/ethnicity are respected within the field.” Most of the respondents, across races and ethnicities, agreed that gaps in respect remain (15).

Among the many purported benefits of diversity initiatives is the promise that when minority members contribute novel perspectives, they create a learning opportunity for their peers. However, for minority contributions to affect the performance of others, majority members must attend to them.

The problem is that when assessing others, observers often resort to irrelevant cues that can be misleading, even deleterious (16, 17). In a series of experiments, Levine *et al.* (18) showed that market traders were more likely to mimic counterparts who happened to share their race or ethnicity. They were less likely to heed the behavior of non-coethnics. Even if such a distinction was not in the traders' self-interest, it persisted across markets and cultures and led to mispricing and market bubbles.

Such evidence motivates the question that we pose here: To what extent do White working-age Americans pay attention to Black peers? If people allocate their attention along racial lines, then they will be less likely to learn from those of a different race. In recent years, advocates for racial diversity have been stressing that changing the demographic composition of a field is not enough (19, 20). Diversity initiatives that simply involve the mixing of people with different characteristics may not suffice to overcome the racial disparity in attention. The essential link between diversity and learning from peers may require inclusive recognition—respectful attendance to diverse peers.

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### The study: Are Whites less likely to learn from Black peers?

As an everyday example of learning from the choices of others, consider the decision to carry an umbrella to work: A woman looks out the window of her urban apartment building and sees no signs of impending rain. On second thought, she turns her gaze to the sidewalk below, where she observes many passersby carrying umbrellas. Aware that the perspective from her window allows only a limited view of the sky, she rightly grabs her umbrella when leaving the apartment. It would seem unwise for her to ignore the umbrella-carrying choices of minority passersby. Yet something like that might be happening, with more severe consequences, in the organizations in which we live and work.

To answer questions about attention and behavior across races, we designed an experiment that resembles the umbrella-carrying decision. Tasked with solving a puzzle, participants were exposed to (what they knew to be) ambiguous information. Before deciding, they could observe the choices of two peers who, like the umbrella-carrying passersby, solved the same puzzle. A participant could reach an accurate solution only if they noticed the peers' choices and incorporated that information in their decision-making (see Appendix).

Put differently, whether a participant paid attention to their peers was evident from the solution submitted. Those who failed to attend to others' choices made poor decisions. By experimentally varying the race of the peers, we were able to ascertain whether White participants paid equal attention to Black peers versus White ones (see Fig. 1 and Materials and Methods).

Like many organizational decisions, the puzzle required piecing together uncertain information to reach a decision. In addition, the task was highly salient for achieving a reward based on good performance: The puzzle was designed as an incentivized task, so it was in each participant's self-interest to gather information, including by learning from peers to reach a correct solution. The task required no interpersonal trust or teamwork, thus reducing the known influences of in-group favoritism or out-group derogation (21, 22, 23).

After participants submitted their responses, we also asked them to assess their peers' skills using six relevant items, each on a seven-point Likert scale (Cronbach's  $\alpha = 0.973$ ; see Appendix).

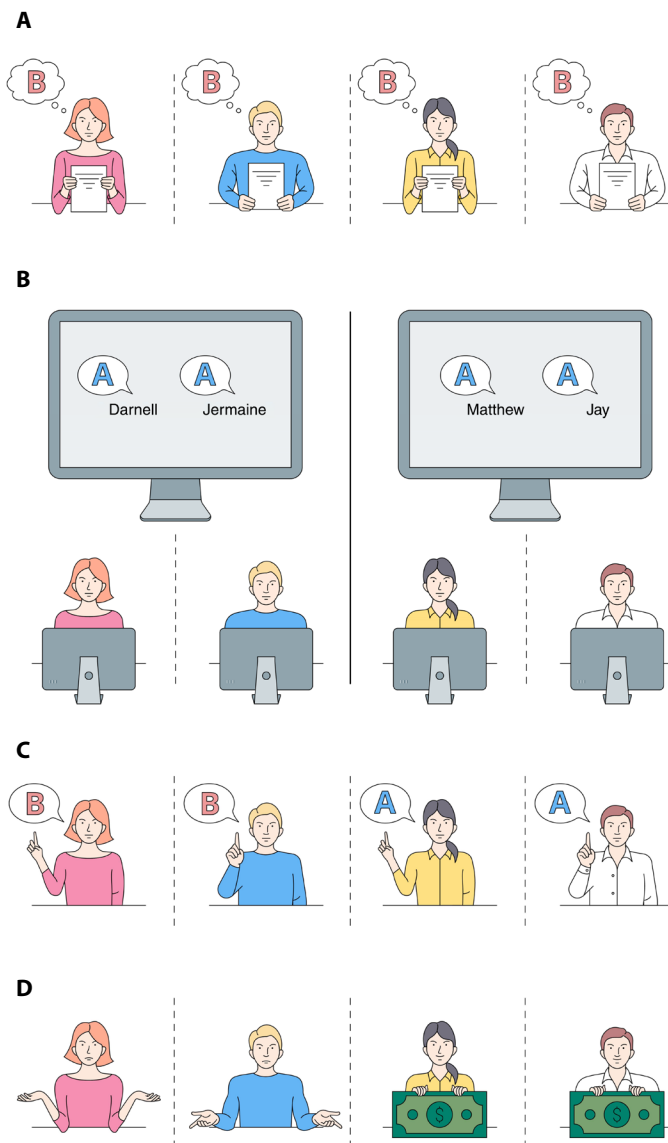
### Sample

To answer the research question, we assembled a highly powered sample of White working-age Americans ( $n = 2116$ ). Sample size and criteria for recruitment and exclusion were preregistered, and we proceeded to recruit participants.

We screened on demographics, and each prospective participant also underwent a rigorous comprehension test of the task (see Materials and Methods). After attrition due to lacking comprehension and other causes, the initial sample produced a usable sample ( $n = 1449$ ) that was gender-balanced (male, 49.6%; female, 48.5%; nonbinary, 1.9%) composed of participants who were well educated (over 88% had at least some higher education) and of working age (mean age, 35; 97.5% between ages 18 and 65). The setting allowed us to motivate participants to reason carefully: Those who answered correctly earned up to \$26.43/hour, well above the going rate (see Materials and Methods).

### Experimental conditions

Participants were randomized into six conditions ( $2 \times 3$  design), such that any given participant was matched with two fictitious peers who bore typically (A) Black or (B) White names—and each



**Fig. 1. An overview of the experimental procedure.** Randomized into one of six experimental conditions, (A) a participant, White male or female, is asked to solve a puzzle using information that is known to be ambiguous (and hence, the participant can benefit from observing how others solved the same puzzle). (B) Before deciding, the participant can observe the solutions of two peers, who are identified by their first names, typically Black or White American. Depending on the condition, participants may also receive information about past peer accomplishments or witness the ongoing accomplishments of their peers. (C) The participant submits a solution, and then he or she assesses peers' skill and provides some demographic information. At the session's end, (D) the participants who choose correctly receive a 200% bonus. For details, see Materials and Methods and Appendix.

participant either (i) received no information about peer accomplishments (baseline) or (ii) received information about the prior accomplishments of the peers (information provision) or (iii) could experience the ongoing accomplishments of the peers by witnessing them (experiential recognition).

### Information provision

Before engaging with the puzzle, each participant received information about the peers' prior accomplishments. This design allowed us

to observe whether a participant is more likely to pay attention to peers after learning that they performed well in a test of relevant ability. Why might such a priori certification remedy the racial attention deficit? If ignorance causes prejudice, then it can be cured by information, argues a long-rooted view (24–26). Similarly, if discrimination is statistical (27, 28), then it should be diminished when information about specific individuals replaces population averages. Empirically, a similar treatment was shown to reduce sex discrimination in employment (29). The treatment is also informed by evidence that minorities were quicker to integrate into professions that rely on credentials (30).

However, there are also reasons to expect that a priori certification will not change racial disparities in attention. Studies suggest that credentials held by Black job applicants or employees may matter less than identical ones held by Whites (31–33). Research, both archival and experimental, questions the possibility of reducing bias or encouraging diversity through the provision of information (34–37).

Methodwise, participants in this condition were first asked to undergo a test of cognitive ability (see Appendix). After the test, we provided their grades together with the grades of their peers, which were invariably high (see Appendix). Then, as in the baseline study, participants were presented with the experimental task and peer choices, made behavioral choices, and evaluated peers' skills.

### Experiential recognition

Whereas information provision involves a priori information about skill, this intervention directly alters the participant's experience with peers. As the participant repeatedly observes the peers' behavior, he or she witnesses the peers' continued accomplishments. This treatment, therefore, involves the ongoing experience of peers' abilities.

The treatment is informed by research that points to recognition gaps, "disparities in worth and cultural membership between groups in a society" (2), resulting from stigmatization in which the contributions of individuals and groups are devalued. Not based on racial antipathy or overtly racist ideology (16, 31, 38), stigmatization is an environmental condition (39–41). This remedy corresponds to a situation in which an organization adopts a policy of subtle inclusion cues, built into the work environment. These policies can be designed not only to "affect the psychology of [targeted minorities], but also the psychology of those who interact with them" (20).

Why may experiential recognition remedy the racial attention deficit? Psychologists have shown that learning from experience differs from learning from description (42). People seem to weigh experience more heavily than other sources of knowledge (43, 44), perhaps because personal experience is readily available and emotionally vivid (45, 46). Researchers found that experience can reduce the tendency to categorize people by their race (47). An experience perceived as positive can reduce bias [although just slightly; (48)]. However, on the other hand, the experience of diversity has been associated with outcomes that suggest less attention to minority members, such as reduced communications (49), increased polarization (50), and inadequate responses to changing circumstances (51). Furthermore, experiencing first-hand contact may maintain or even reinforce stereotypes (52, 53). In this setting, these findings imply that Whites could remain inattentive to Black peers. A similar prediction arrives from other research perspectives: Black peers can be overlooked if Whites prefer learning from peers of the same race (18), have ingrained racial animosity (28), or generally rely on stereotypes (24, 54, 55). These different theoretical causes would similarly predict that this remedy proves futile.

Methodwise, participants in this condition encountered an extended form of the baseline study, which encompassed three rounds rather than one. In the first round, the participant followed the same procedure as in the baseline condition. After submitting their solution to the puzzle, the participant could observe the accuracy of his or her choice—and the always-accurate choices of the peers, Black or White. In the next rounds, we presented puzzles of similar nature but varied the information (see Appendix). Each participant remained matched with the same peers throughout the session. After the last round of behavioral choices, we collected peer evaluation, as in the other conditions.

## RESULTS

We validated the approach and instrument by documenting several expected results (see Appendix). Then, we proceeded to examine how race shapes attention to peers and the evaluation of their skills.

### Baseline

Although participants could only gain by learning from their peers, they exhibit a racial attention deficit: In the baseline condition, participants are 33% more likely to pay attention to White peers (0.68) compared to Black ones (0.51) ( $\chi^2 = 13.823$ ,  $P < 0.0002$ ). Relatedly, participants evaluate Black peers as less skilled than White ones [ $t(488) = 4.0022$ ,  $P < 0.0001$ ,  $d = 0.362$ ; Fig. 2]. We find no gender-related differences in attention. Specifically, here and in the other conditions, the results remain after statistically adjusting (controlling) for the participants' gender, cognitive ability, education, and recollection of peer race (see Appendix).

Some worry that online studies underestimate effect sizes (56). This may be particularly true in this study: Research shows that, compared to face-to-face interaction, computer-mediated communication shows less intergroup bias (57) and less consideration of irrelevant cues, such as race (58). Thus, the bias that we find online may be exacerbated in face-to-face interaction.

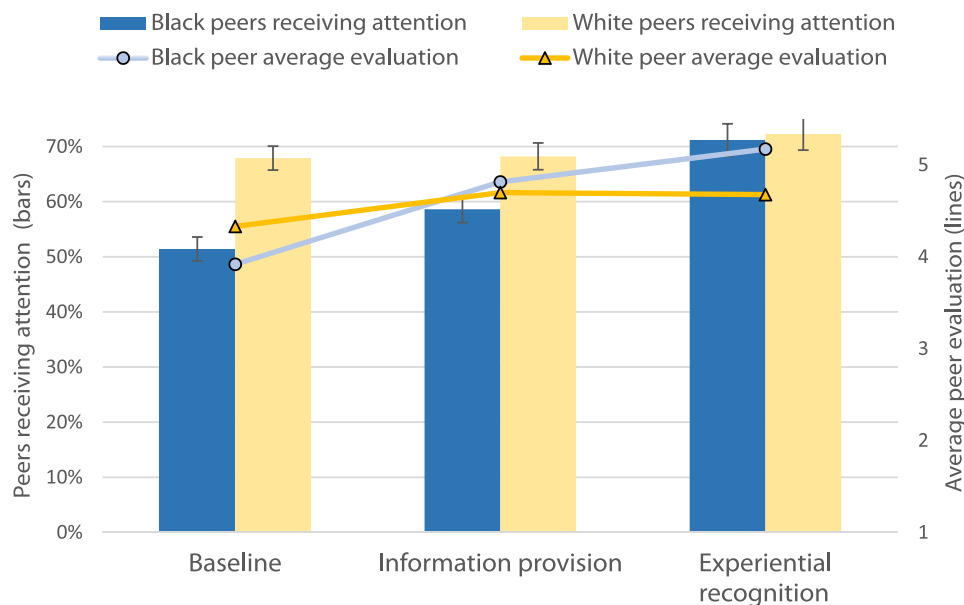
### Information provision

In contrast to the baseline study, information provision erases racial disparity in the assessment of peer skill [ $t(483) = 1.1096$ ,  $P < 0.2677$ ; Fig. 2]. When it comes to behavior, the deficit in attention narrows but remains substantial: Even with information, participants are still 15% less likely to attend to Black peers compared to White ones (White = 0.68; Black = 0.59;  $\chi^2 = 4.808$ ,  $P < 0.0283$ ). Information provision ameliorates, but does not eliminate, the racial attention deficit. The disparities are proven robust in various statistical specifications (see Appendix).

### Experiential recognition

When we analyze peer evaluations, we find that the experience considerably benefits Black peers. In this condition, evaluation of their skill rises above those of White peers [ $t(471) = 3.9435$ ,  $P < 0.0001$ , Cohen's  $d = 0.363$ ; Fig. 2].

Turning to behavior, we find a stark difference between the two treatments. Whereas the first intervention changed perceptions but could not erase the racial attention deficit, this intervention both elevates evaluations of Black peers and closes the gap in attention to them. Here, a bias against attending to Black peers is apparent in the first round, essentially replicating the baseline study ( $\chi^2 = 13.034$ ,  $P < 0.0003$ ). However, the racial attention deficit dissipates as the



**Fig. 2.** The ratio of peers receiving attention (bars, left axis) and the average evaluation of peers (lines, right axis) by race and experimental condition ( $n = 1449$ ). Error bars show SEs. Levels of statistical significance are reported in Results; box and contour plots appear in Appendix.

participants witness their peers' accomplishments. In subsequent rounds, we cannot reject the hypothesis that participants equally attend to peers, regardless of race. In the last round, 71% of Black peers and 72% of White receive attention. Again, the results are robust to various statistical specifications (see Appendix).

### Racial attention deficit over time

External events affect people's behavior, and 2020, the year in which we collected the data, was eventful indeed. Race relations were affected by the murder of George Floyd in the United States, the protests that followed the outpouring of sympathy, and the promises of reforms. Politically, from late 2019, the American public was exposed to an array of minority candidates vying for the Democratic presidential nomination, culminating in the nomination of a mixed-race woman to the vice president office in the summer. Ultimately, the year was shaped by the outbreak of coronavirus disease 2019, a pandemic that affected billions and took a grim toll on American minorities (data collection was completed before the presidential election results were known).

To assess how these events may have affected the racial attention deficit, we turned to data collected in the summer of 2017 using a similar method and sample ( $n = 439$ ). Notwithstanding the focal events of 2020, we cannot reject the hypothesis that attention to Black peers has remained unchanged: The likelihood of attending to Black peers in 2017 and 2020 is statistically indistinguishable (see Appendix).

## DISCUSSION

### Why study racial attention deficit?

Efforts at integration, decades in the making at organizational and societal levels, have been slow to bear fruit. For example, in personal accounts, minority scientists sense feeling "unwelcome, unheard, and unvalued" (10). In discussions and interviews, faculty often lament that their competence is questioned because of their race

(11). Even when firms seek to recruit a more diverse cadre of employees, they dismayingly discover that minorities are more likely to leave (59). Why? We highlight a less discussed and less studied cause: inattention.

Much is known about disparities in the distribution of resources, but the racial attention deficit is a form of inequality understudied to date (2). As a distinct form of discrimination, racial attention deficit consists of underestimating, overlooking, or ignoring members of certain groups (1, 2). It differs from other forms of disparity in at least four ways: It does not require the presence of racial animosity, explicit or implicit. It is exhibited behaviorally, through choices and decisions—as opposed to stated beliefs, perceptions, or intentions. It is revealed as omission (of attention) rather than commission (of explicit antipathy). In addition, it harms minorities but also majorities, albeit differently.

Racial attention deficit may be the behavioral mechanism underlying a string of intriguing findings: The dissertations of minority scientists are more innovative but are less likely to be noticed (3). Black employees are less likely to be nominated for award presumably because their achievements are more likely to be overlooked (4). Computer algorithms used to allocate health care underestimate the needs of Black patients (5). Black infants are more likely to survive when they share their physician's race (6), and Black men are more likely to take their physician's recommendations when their race is concordant (7). Although some of these examples can be explained by some form of perverse yet cloaked racism, greater trust, and/or better communication, all of them are consistent with single explanation—a racial attention deficit.

Racial attention deficit may stem from stigmatization. Not overt, stigmatization can be subtle (41, 60). Nonetheless, it goes to the very core of relations among individuals and groups in society because it is about the fundamental question of worth: What is valuable? Who is worthy? (61, 62) Racial attention deficit is a product of social structures in which Blacks and other minorities are stereotyped as



less worthy. Devalued, their actions and choices are disregarded. Overlooked in the structure of attention, they are robbed of opportunities, and this lack of recognition undermines their self-worth. Racial attention deficit, moreover, undermines performance for both minorities and majorities. While some forms of discrimination harm primarily the victim, here, society suffers doubly, as both the discriminator and the discriminated suffer the consequences of bias.

This is evident in our baseline study, which shows that, even when their self-interest should steer them to learn from peers, Whites are less likely to pay attention to Black ones. When we introduce the information provision treatment, Whites are less likely to underestimate the skills of Black peers (Fig. 2). However, merely providing information about peers is not enough. True, it closes the gap in espoused sentiments, resulting in higher evaluations of the skills of Black peers, but it does not eliminate the racial attention deficit. White participants exposed to information about peers are still less likely to follow others' choices when those peers were Black. Such a gap has been documented elsewhere: In a recent experiment, financial investors rated some Black-led teams more favorably than White-led teams, but when it came to acting on this positive sentiment, they showed no such intention (33). If biased choices stem from a racial attention deficit, then it is easier to understand the feeble outcomes associated with diversity training sessions (34, 35), initiatives to reduce prejudice (36), or implicit bias training (63). However well intended, these cures may be treating the wrong disease.

If stigmatization can be subtle and built into the organizational environment, then it follows that remedies should be deliberately designed as subtle and as close as possible to workplace interactions. Experiential recognition thus directly takes up the challenge to develop remedies that may not be quick or easy (36). However, with such a remedy, inclusion can be accomplished without the cynicism and backlashes sometimes triggered by efforts to promote equal treatment (64–66).

The provision of information eliminates disparity in skill assessment and lessens the racial attention deficit. Experiential recognition, the second intervention, not only erased the racial attention deficit but also raised the perceived skill of Blacks above that of Whites. What is more, it is evident that the two treatments increased attention to Black peers more than they increased attention to White ones. Such a result is expected if the treatments dissipate negative stereotypes (33).

We recognize that overcoming bias may be more demanding than it appears. Our design introduced Black peers who were always accurate and placed them directly in front of the White participants. However, outside the experimental realm, no one is flawless. In addition, Whites are not required to gaze at minority peers, let alone generalize the observation to dissipate stereotypes.

Our results cannot tell how long the remedy will last nor whether the Whites are generally more willing to learn from Blacks (or just the Black peers that they encountered). Future research can assess these questions. Our remedy is not meant to cure bias once and for all, but it shows that Whites are willing to learn from some Black peers at some point in time.

### Implications: Who is paying attention to whom?

Starting from the notion that attention is a cognitive resource, psychologists have recently attempted to redirect the “attentional spotlight” (67) as a means to ameliorate social ills, including interventions meant to bring people to pay more attention to what they

post on social media (68) and when they are supposed to appear in court (69). We complement this individualistic perspective with one that places attention in a social context: Who is paying attention to whom? Who recognizes whom as worthy of attention? (60, 61). This question is relevant for many aspects of social life. Our finding that attention is allocated along racial lines has implications, to take one example, for our courts: If White jurors pay less attention to Black as opposed to White witnesses, then this could contribute to unfair rulings in civil cases and unfair judgments in our criminal justice system. Or take another example from the medical field: If White physicians do not pay enough attention to the behavior and communications of their Black patients, the results can be misdiagnoses and inadequate treatments.

Our finding that attention is allocated along racial lines—causing learning opportunities to be squandered and hurting majority as well as minority members—has implications for organizations, whether businesses or nonprofits. By turning on an attentional spotlight to illuminate peers' accomplishments, greater equity in the allocation of attention can bring greater effectiveness in accomplishing our collective goals.

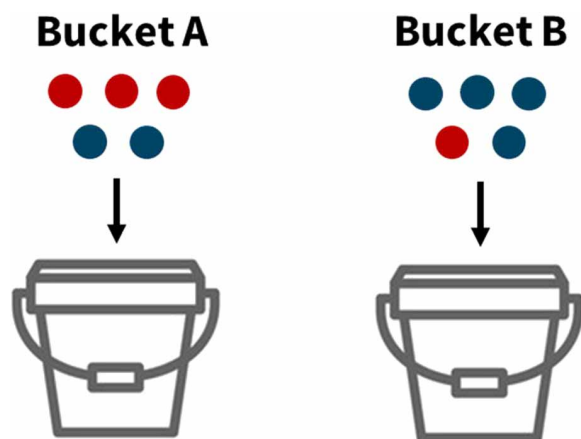
It can pay, our study shows, to pay attention. Whether in learning from co-workers or from competitors, organizations amplify opportunities to benefit from paying attention to others. Science, in particular, provides good examples of learning based on recognizing the limitations of one's viewpoint: We scientists submit our work to the review of peers and, in turn, review our peers' work. We join workshops and conferences to learn from other scientists, we recruit new members into our departments to bring fresh insights from outside, and we encourage our colleagues to dissent when there is a danger of locking into a myopic perspective.

As the institutional arena most organized around principles of open observation and communication, science is the best example of a setting where we, as a society, should be highly attentive to structures and practices that promote or obstruct peer learning. Science is a collective enterprise. Individual genius might still play some role, but discoveries are increasingly produced in teams. Bibliometric studies, for example, report a substantial growth in the number of coauthors of scientific articles across almost all fields of knowledge production (70). Beyond sheer numbers, teams can be more productive and have a greater impact because they can bring greater diversity of backgrounds and perspectives to bear on a problem (71–73).

If science is becoming more collective and collaborative, then it is also becoming more demographically diverse. Historically underrepresented categories—women and racial minorities—are gaining entry to and establishing careers in scientific fields that were once homogeneous. However, for the benefits of diversity to be realized, scientists must learn from their peers.

The question with which we opened is whether racial attention deficit undermines such learning. In an uncertain environment, which we documented, White decision-makers are more likely to disregard information emanating from Black peers, even if objectively essential. By failing to recognize the perspective of the racial other and clinging to their observational viewpoint alone, they miss opportunities to learn, thus undermining their own performance. The unmistakable implication of the findings of our baseline study is that policy-makers must recognize that one legacy of a racially divided society is a bias in attention.

Although an essential first step, recognizing racial attention deficit in one's organization is, of course, not enough. For this reason,



**Fig. 3. The puzzle, as shown to the participants.** Details are in Appendix and experimental instructions.

we further explored interventions that might remove this obstruction to learning. We found that providing information about the past accomplishments improved Whites' explicit evaluations of Black peers. However, although it reduced, it did not eliminate the biased behavior in patterns of attention. The findings indicate that racial attention deficit can be remedied when the accomplishments of Black peers receive ongoing recognition that is embedded in practice.

Together, these findings have crucial lessons for grantors, university presidents, senior administrators, deans, department chairs, principal investigators, postdocs, PhD students, and research assistants—yes, everyone engaged in the world of science. They are lessons as well for line supervisors, team leaders, engineers, project managers, professional staff, C-suite executives, agency heads, members of boards, and members of cabinets—yes, everyone engaged in organizational affairs whether that be in the fields of business, culture, nonprofits, or government. Our study evidences that achieving the full benefits of racial diversity requires policies and practices of inclusion (74). As part of such a strategy, our specific contribution points to inclusive recognition as a critical component of organizational life.

What our study reveals is that recognition gaps can be corrected. Closing them is crucial. First, a climate of inclusive recognition, where minority members are respected for their accomplishments and contributions, improves their well-being (2, 55). Recognition ultimately matters because human dignity and a sense of worth have intrinsic value. Second, our research also shows that, by mitigating the attention deficit, recognition enhances problem solving. Thus, more attention can improve everyone's performance. If you want to do right and do better, pay attention to who is paying attention to whom.

## MATERIALS AND METHODS

To capture the willingness to pay attention to peers, we relied on a familiar experimental instrument—information cascades (75, 76). Here, as in past research, each participant was asked to use observational and private information to determine the true state of the world in hopes of winning a cash prize. Each participant received private information that was known to be incomplete, had a chance to contemplate it, and then observed the decisions (but not the

information) of two fictitious peers, identified only by their typical Black or White names who answered an identical question.

Because a participant knew that their private information was incomplete, they could benefit from paying attention to peer choices. Moreover, with the accumulation of information about peer choices, participants would have been wise to overrule their own guess and follow the peers. The puzzle is designed such that if both peers make the same choice, then the participant would be right to ignore the private information he or she has and follow the peers (77, 78). The design allowed us to measure whether participants heeded peers' choice and whether attention is affected by the peers' race.

## The experimental task

The task was used as in prior research: All the experimental conditions commenced with the participant shown two buckets that contained an unequal number of red and blue marbles (Fig. 3). Each participant was told that one of the buckets was randomly selected as the winner. To ascertain which bucket it was, the participant received some information: Marbles were randomly drawn from the winning bucket, shown to the peers and the participant, and then returned to the bucket. One marble was privately shown to the first peer, and then that peer publicly guessed the winning bucket. Then, another marble was drawn and shown to the second peer, who made an identical guess. Last, a marble was shown to the participant. The color of that marble always contradicted the information conveyed through the peer choices. However, given the contents of the buckets and the number of peers, each participant should have overruled their own observation and embrace the peers' choice (see Appendix).

## Racial cues

The study revolves around race, but an evident manipulation of race conditions can raise a host of methodological problems, including social desirability and demand characteristics. These concerns have become especially severe because it is no longer socially acceptable to disclose prejudice or discrimination (16, 32, 36, 79). An explicit manipulation of race is not only risky but also unnecessary: Sizeable evidence shows that (i) social categorization of others based on race and ethnicity is an automatic, implicit, unconscious, and highly accurate cognitive process (80–82) and (ii) mere perception or categorization of racial or ethnic diversity is sufficient to exert considerable influence on how people behave (83, 84).

To mitigate risks while preserving potency, the experimental design relies on indirect racial cues: identifying peers' race through typically Black or White American first names. Such manipulation has been often used in audit and correspondence studies [e.g., (31, 85–88)]. We draw upon the name lists used in prior research on racial and ethnic disparities, considering the objective distinctiveness of racial affiliation, the subjective perception of the name, and racial differences in socioeconomic status (see Appendix).

Before settling on the use of names, we considered alternatives such as face-to-face interaction or the provision of photos (41, 79). However, visual or verbal cues would have introduced nonracial cues, such as gender, age, physical attractiveness, and language styles. These are known to affect the perception of others and thus may confound the effects of race. Furthermore, the use of face-to-face interaction would have curbed sample size and may necessitate the use of students, who would have made the study sample younger and less educated than the working-age population that we sought.

In addition, had we provided photos of peers, then we would have needed to ask participants likewise to upload their own images, raising a host of privacy and technical issues.

In addition to indirect racial cues, we further addressed demand characteristics in several ways: We asked everyone to provide their first name, so the availability of peer names appears plausible. In the information provision condition, we required the participants to start with a test of cognitive ability, so that the grades that they subsequently received appeared legitimate. Last, we asked participants to submit their answers only after the peers made their choices. An alternative that we considered, asking the participants to report their answers before and after the peers' choices, risked appearing as if we expected them to mimic the peers. Similarly, in the experiential recognition condition, we chose not to highlight the peers' accomplishments but merely report them alongside the participants'.

### Sample and preregistration

Experiments excel in determine causality, and audit and correspondence studies have become a popular method for studying discrimination (32). Yet our research question is not well answered by either method because learning cannot directly be observed or incentivized.

To answer questions about race and learning while preserving the generalizability of the results, we designed a sample that resembles Whites in the American workforce and recruited participants from Prolific Academic, a research service that screens participants on criteria of residency, race, ethnicity, gender, and age (on the benefits and drawbacks of online experiments; see Appendix). Before recruitment began, we preregistered the criteria for participation and exclusion, together with a statistical power analysis used to determine the sample size. Later, we deposited in the same location research materials and data (<https://j.mp/OSFRacialAttentionDeficit>).

As discussed, an evident treatment of race could raise a host of methodological problems, so we avoided mentioning race or ethnicity during recruitment. Instead, we relied on demographic information that participants had provided upon joining the research service to reach the target population. We took steps to mitigate contamination of the participant pool (see Appendix). Last, we limited participants to a single session, tracking them to verify that none attempted to participate more than once. In addition, the research service uses financial and phone records to assure that individuals do not hold more than one participant account.

To corroborate our filters, we asked participants at the end of the experimental session about their country of residence, race, and ethnicity. Their responses indicate that 99% resided in the United States and 95% describe themselves as White, 4% as Latino (which may be White), and 1% as neither.

### Exclusion criteria

After reading the experiment's instructions, each participant was presented with a rigorous set of comprehension questions to assess their understanding of the task. Only those who answered all perfectly on the first trial were allowed to participate in the study. Of the initial sample of 2116 participants, 22% did not pass the comprehension test, 8% did not complete the study, and 1% attempted to participate more than once, resulting in a usable sample of 1449 participants. Because participants were rejected before assignment to experimental conditions, we do not observe differential attrition ( $\chi^2 = 0.67$ ,  $P > 0.98$ ).

### Compensation

At a minimum, participants earned the equivalent of \$11.49/hour, and those who answered correctly received up to \$26.43/hour, quadruple the minimum wage on Prolific Academic (\$6.50/hour).

### Statistical power

Before commencing data collection, we conducted a priori analysis of statistical power relying on Fisher's exact test (proportion inequality, two independent groups) with power ( $1 - \beta$  error probability) of at least 0.8 at  $P = 0.05$  (89).

### Manipulation checks

As discussed, race and ethnicity are often manipulated indirectly to mitigate risks while preserving potency. In such a design, a manipulation check can constitute a treatment in itself, for example, by priming participants to focus on peers' race and not their advice (90). To balance competing demands, we chose to query recollection but did not use it as an exclusion criterion, in line with current recommendations and the preregistration. Specifically, in a poststudy questionnaire, after participants have revealed their behavioral choices and assessment of peers, we presented an open-ended item: "Can you guess the other players' ethnicity or race? Type anything you can think of."

Reassuringly, we find no difference in recollection of peer race/ethnicity between the experimental conditions (accurate recall when peer was White = 0.625; Black = 0.614;  $t$  test  $P > 0.67$ ; Wilcoxon  $P > 0.67$ ). We did not expect that recollection would affect behavior, in line with the evidence showing that categorization of others based on their race and ethnicity is an automatic, implicit, and unconscious cognitive process (80–82). As expected, recollection of peer race/ethnicity does not predict behavior. In other words, whether one remembers a peer's race or ethnicity hardly indicates whether they will pay attention to the peer (see Appendix).

### The 2017 study

The earlier study uses the same experimental task, names, and treatments. It relies on a similar approach to recruitment and exclusion, although it uses a smaller sample, collected on Amazon Mechanical Turk. The studies were conducted sequentially, rather than simultaneously, but robustness tests demonstrate no indication of participant contamination (see Appendix).

### Ethical considerations

All the studies have been approved by the relevant ethics committees and institutional review boards. We have complied with all relevant ethical regulations and obtained informed consent from all participants in the manner prescribed in the ethics reviews.

### SUPPLEMENTARY MATERIALS

Supplementary material for this article is available at <https://science.org/doi/10.1126/sciadv.abg9508>

### REFERENCES AND NOTES

1. M. Lamont, G. M. Silva, J. S. Welburn, J. Guetzkow, N. Mizrahi, H. Herzog, E. Reis, *Getting Respect: Responding to Stigma and Discrimination in the United States, Brazil, and Israel* (Princeton Univ. Press, 2016).
2. M. Lamont, Addressing recognition gaps: Destigmatization and the reduction of inequality. *Am. Sociol. Rev.* **83**, 419–444 (2018).
3. B. Hofstra, V. V. Kulkarni, S. Munoz-Najar Galvez, B. He, D. Jurafsky, D. A. McFarland, The diversity–innovation paradox in science. *Proc. Natl. Acad. Sci. U.S.A.* **117**, 9284–9291 (2020).

4. N. Rim, R. Rivera, A. Kiss, B. Ba, (<https://ideas.repec.org/p/hka/wpaper/2020-065.html>, 2021).
5. Z. Obermeyer, B. Powers, C. Vogeli, S. Mullainathan, Dissecting racial bias in an algorithm used to manage the health of populations. *Science* **366**, 447–453 (2019).
6. B. N. Greenwood, R. R. Hardeman, L. Huang, A. Sojourner, Physician–patient racial concordance and disparities in birthing mortality for newborns. *Proc. Natl. Acad. Sci. U.S.A.* **117**, 21194–21200 (2020).
7. M. Alsan, O. Garrick, G. C. Graziani, Does diversity matter for health? Experimental evidence from Oakland. *Am. Econ. Rev.* **109**, 4071–4111 (2019).
8. D. S. Abrams, M. Bertrand, S. Mullainathan, Do judges vary in their treatment of race? *J. Leg. Stud.* **41**, 347–383 (2012).
9. R. W. Fairlie, F. Hoffmann, P. Oreopoulos, A community college instructor like me: Race and ethnicity interactions in the classroom. *Am. Econ. Rev.* **104**, 2567–2591 (2014).
10. C. Puritty, L. R. Strickland, E. Alia, B. Blonder, E. Klein, M. T. Kohl, E. McGee, M. Quintana, R. E. Ridley, B. Tellman, L. R. Gerber, Without inclusion, diversity initiatives may not be enough. *Science* **357**, 1101–1102 (2017).
11. E. G. Price, A. Gozu, D. E. Kern, N. R. Powe, G. S. Wand, S. Golden, L. A. Cooper, The role of cultural diversity climate in recruitment, promotion, and retention of faculty in academic medicine. *J. Gen. Intern. Med.* **20**, 565–571 (2005).
12. T. G. Reames, A call for authentic Black engagement in the academy and beyond. *Nat. Hum. Behav.* **5**, 2 (2021).
13. S. R. Harper, Am I my brother's teacher? Black undergraduates, racial socialization, and peer pedagogies in predominantly white postsecondary contexts. *Rev. Res. Educ.* **37**, 183–211 (2013).
14. L. H. Pololi, A. T. Evans, B. K. Gibbs, E. Krupat, R. T. Brennan, J. T. Civian, The experience of minority faculty who are underrepresented in medicine, at 26 representative U.S. Medical Schools. *Acad. Med.* **88**, 1308–1314 (2013).
15. S. Allgood, L. Badgett, A. Bayer, M. Bertrand, S. E. Black, N. Bloom, L. D. Cook, *Professional Climate Survey: Final Report* (American Economic Association, 2019).
16. A. R. Pearson, J. F. Dovidio, S. L. Gaertner, The nature of contemporary prejudice: Insights from aversive racism. *Soc. Personal. Psychol. Compass* **3**, 314–338 (2009).
17. A. B. Carter, K. W. Phillips, The double-edged sword of diversity: Toward a dual pathway model. *Soc. Personal. Psychol. Compass* **11**, e12313 (2017).
18. S. S. Levine, E. P. Apfelbaum, M. Bernard, V. L. Bartelt, E. J. Zajac, D. Stark, Ethnic diversity deflates price bubbles. *Proc. Natl. Acad. Sci. U.S.A.* **111**, 18524–18529 (2014).
19. R. J. Crisp, R. Meleady, Adapting to a multicultural future. *Science* **336**, 853–855 (2012).
20. V. Purdie Greenaway, K. M. Turetsky, Socioecological diversity and inclusion: A framework for advancing diversity science. *Curr. Opin. Psychol.* **32**, 171–176 (2020).
21. D. Balliet, J. Wu, C. K. W. De Dreu, Ingroup favoritism in cooperation: A meta-analysis. *Psychol. Bull.* **140**, 1556–1581 (2014).
22. R. Kranton, M. Pease, S. Sanders, S. Huettel, Deconstructing bias in social preferences reveals groupy and not-groupy behavior. *Proc. Natl. Acad. Sci. U.S.A.* **117**, 21185 (2020).
23. O. Schilke, M. Reimann, K. S. Cook, Trust in social relations. *Annu. Rev. Sociol.* **47**, 239–259 (2021).
24. W. G. Stephan, C. W. Stephan, in *Groups in Contact: The Psychology of Desegregation*, N. S. Miller, M. B. Brewer, Eds. (Academic Press, 1984), pp. 229–255.
25. G. W. Allport, *The Nature of Prejudice* (Addison Wesley, 1954).
26. L. Zhang, A fair game? Racial bias and repeated interaction between NBA coaches and players. *Adm. Sci. Q.* **62**, 603–625 (2017).
27. W. T. Bielby, J. N. Baron, Men and women at work: Sex segregation and statistical discrimination. *Am. J. Sociol.* **91**, 759–799 (1986).
28. G. S. Becker, *The Economics of Discrimination* (University of Chicago Press, 1957).
29. M. E. Heilman, Information as a deterrent against sex discrimination: The effects of applicant sex and information type on preliminary employment decisions. *Organ. Behav. Hum. Perform.* **33**, 174–186 (1984).
30. K. Stainback, D. Tomaskovic-Devey, *Documenting Desegregation: Racial and Gender Segregation in Private Sector Employment Since the Civil Rights Act* (Russell Sage Foundation, 2012).
31. M. Bertrand, S. Mullainathan, Are emily and greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *Am. Econ. Rev.* **94**, 991–1013 (2004).
32. L. Quillian, New approaches to understanding racial prejudice and discrimination. *Annu. Rev. Sociol.* **32**, 299–328 (2006).
33. S. Lyons-Padilla, H. R. Markus, A. Monk, S. Radhakrishna, R. Shah, N. A. Dodson IV, J. L. Eberhardt, Race influences professional investors' financial judgments. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 17225–17230 (2019).
34. E. H. Chang, K. L. Milkman, D. M. Gromet, R. W. Rebele, C. Massey, A. L. Duckworth, A. M. Grant, The mixed effects of online diversity training. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 7778–7783 (2019).
35. A. Kalev, F. Dobbin, E. Kelly, Practices or best guesses? Assessing the efficacy of corporate affirmative action and diversity policies. *Am. Sociol. Rev.* **71**, 589–617 (2006).
36. E. L. Paluck, R. Porat, C. S. Clark, D. P. Green, Prejudice reduction: Progress and challenges. *Annu. Rev. Psychol.* **72**, 533–560 (2021).
37. M. Abascal, J. Xu, D. Baldassari, People use both heterogeneity and minority representation to evaluate diversity. *Sci. Adv.* **7**, eabf2507 (2021).
38. L. D. Bobo, J. R. Kluegel, R. A. Smith, in *Racial Attitudes in the 1990s: Continuity and Change*, S. Tuch, J. Martin, Eds. (Praeger, 1997), vol. 15, pp. 15–42.
39. S. T. Fiske, in *The Handbook of Social Psychology*, D. T. Gilbert, S. T. Fiske, G. Lindzey, Eds. (McGraw-Hill, 1998), pp. 357–411.
40. V. Purdie-Vaughns, C. M. Steele, P. G. Davies, R. Dittmann, J. R. Crosby, Social identity contingencies: How diversity cues signal threat or safety for African Americans in mainstream institutions. *J. Pers. Soc. Psychol.* **94**, 615–630 (2008).
41. J. L. Eberhardt, *Biased: Uncovering the Hidden Prejudice That Shapes What We See, Think, and Do* (Penguin Books, 2019).
42. R. Hertwig, G. Barron, E. U. Weber, I. Erev, Decisions from experience and the effect of rare events in risky choice. *Psychol. Sci.* **15**, 534–539 (2004).
43. M. Kaustia, S. Knüpfer, Do investors overweight personal experience? evidence from IPO subscriptions. *J. Financ.* **63**, 2679–2702 (2008).
44. U. Simonsohn, N. Karlsson, G. Loewenstein, D. Ariely, The tree of experience in the forest of information: Overweighing experienced relative to observed information. *Game Econ. Behav.* **62**, 263–286 (2008).
45. J. G. March, *The Ambiguities of Experience* (Cornell Univ. Press, 2010).
46. R. E. Nisbett, L. Ross, *Human Inference: Strategies and Shortcomings of Social Judgment* (Prentice-Hall, 1980).
47. R. O. Kurzban, J. Tooby, L. Cosmides, Can race be erased? Coalitional computation and social categorization. *Proc. Natl. Acad. Sci. U.S.A.* **98**, 15387–15392 (2001).
48. I. N. Onyeador, N. M. Wittlin, S. E. Burke, J. F. Dovidio, S. P. Perry, R. R. Hardeman, L. N. Dyrbye, J. Herrin, S. M. Phelan, M. van Ryn, The value of interracial contact for reducing anti-black bias among non-black physicians: A cognitive habits and growth evaluation (CHANGE) study report. *Psychol. Sci.* **31**, 18–30 (2020).
49. N. DiTomaso, C. Post, R. Parks-Yancy, Workforce diversity and inequality: Power, status, and numbers. *Annu. Rev. Sociol.* **33**, 473–501 (2007).
50. D. H. Zhu, Group polarization in board decisions about CEO compensation. *Organ. Sci.* **25**, 552–571 (2014).
51. M. del Carmen Triana, T. L. Miller, T. M. Trzebiatowski, The double-edged nature of board gender diversity: Diversity, firm performance, and the power of women directors as predictors of strategic change. *Organ. Sci.* **25**, 609–632 (2014).
52. T. F. Pettigrew, L. R. Tropp, *When Groups Meet: The Dynamics of Intergroup Contact* (Psychology Press, 2011).
53. A. Acharya, M. Blackwell, M. Sen, *Deep Roots: How Slavery Still Shapes Southern Politics* (Princeton Studies in Animal Behavior, Princeton Univ. Press, 2018).
54. D. T. Campbell, Stereotypes and the perception of group differences. *Am. Psychol.* **22**, 817–829 (1967).
55. R. J. Ely, I. Padavic, D. A. Thomas, Racial diversity, racial asymmetries, and team learning environment: Effects on performance. *Organ. Stud.* **33**, 341–362 (2012).
56. J. Chandler, G. Paolacci, E. Peer, P. Mueller, K. A. Ratliff, Using nonnaive participants can reduce effect sizes. *Psychol. Sci.* **26**, 1131–1139 (2015).
57. A. D. Bhappu, T. L. Griffith, G. B. Northcraft, Media effects and communication bias in diverse groups. *Organ. Behav. Hum. Decis. Process.* **70**, 199–205 (1997).
58. J. Hedlund, D. R. Ilgen, J. R. Hollenbeck, Decision accuracy in computer-mediated versus face-to-face decision-making teams. *Organ. Behav. Hum. Decis. Process.* **76**, 30–47 (1998).
59. S. Skaggs, N. DiTomaso, in *Diversity in the Work Force*, D. Nancy, P. Corinne, Eds. (Emerald, 2004), vol. 14, pp. 279–306.
60. C. L. Ridgeway, *Status: Why Is It Everywhere? Why Does It Matter?* (Russell Sage Foundation, 2019).
61. D. Stark, *The Sense of Dissonance: Accounts of Worth in Economic Life* (Princeton Univ. Press, 2011).
62. M. Lamont, Toward a comparative sociology of valuation and evaluation. *Annu. Rev. Sociol.* **38**, 201–221 (2012).
63. C. K. Lai, A. L. Skinner, E. Cooley, S. Murrar, M. Brauer, T. Devos, J. Calanchini, Y. J. Xiao, C. Pedram, C. K. Marshburn, S. Simon, J. C. Blanchar, J. A. Joy-Gaba, J. Conway, L. Redford, R. A. Klein, G. Roussos, F. M. H. Schellhaas, M. Burns, X. Hu, M. C. McLean, J. R. Axt, S. Asgari, K. Schmidt, R. Rubinstein, M. Marini, S. Rubichi, J. E. L. Shin, B. A. Nosek, Reducing implicit racial preferences: II. Intervention effectiveness across time. *J. Exp. Psychol. Gen.* **145**, 1001–1016 (2016).
64. F. Dobbin, A. Kalev, The promise and peril of sexual harassment programs. *Proc. Natl. Acad. Sci. U.S.A.* **116**, 12255 (2019).
65. M. E. Heilman, C. J. Block, P. Stathatos, The affirmative action stigma of incompetence: Effects of performance information ambiguity. *Acad. Manag. J.* **40**, 603–625 (1997).
66. F. Dobbin, D. Schrage, A. Kalev, Rage against the Iron Cage: The varied effects of bureaucratic personnel reforms on diversity. *Am. Sociol. Rev.* **80**, 1014–1044 (2015).
67. M. M. Müller, P. Malinowski, T. Gruber, S. A. Hillyard, Sustained division of the attentional spotlight. *Nature* **424**, 309–312 (2003).



68. G. Pennycook, Z. Epstein, M. Mosleh, A. A. Arechar, D. Eckles, D. G. Rand, Shifting attention to accuracy can reduce misinformation online. *Nature* **592**, 590–595 (2021).
69. A. Fishbane, A. Ouss, A. K. Shah, Behavioral nudges reduce failure to appear for court. *Science* **370**, eabb6591 (2020).
70. S. Wuchty, B. F. Jones, B. Uzzi, The increasing dominance of teams in production of knowledge. *Science* **316**, 1036–1039 (2007).
71. L. Lungeanu, N. S. Contractor, The effects of diversity and network ties on innovations. *Behav. Sci.* **59**, 548–564 (2015).
72. M. De Vaan, D. Stark, B. Vedres, Game changer: the topology of creativity. *Am. J. Sociol.* **120**, 1144–1194 (2015).
73. S. E. Page, *The Diversity Bonus: How Great Teams Pay off in the Knowledge Economy* (Princeton Univ. Press, 2017).
74. S. Tilghman, B. Alberts, D. Colón-Ramos, K. Dzirasa, J. Kimble, H. Varmus, Concrete steps to diversify the scientific workforce. *Science* **372**, 133–135 (2021).
75. L. R. Anderson, C. A. Holt, Information cascades in the laboratory. *Am. Econ. Rev.* **87**, 847–862 (1997).
76. G. Weizsäcker, Do we follow others when we should? A simple test of rational expectations. *Am. Econ. Rev.* **100**, 2340–2360 (2010).
77. S. Bikhchandani, D. Hirshleifer, I. Welch, A theory of fads, fashion, custom, and cultural change as informational cascades. *J. Polit. Econ.* **100**, 992–1026 (1992).
78. L. D. Phillips, W. Edwards, Conservatism in a simple probability inference task. *J. Exp. Psychol.* **72**, 346–354 (1966).
79. P. A. Goff, C. M. Steele, P. G. Davies, The space between us: Stereotype threat and distance in interracial contexts. *J. Pers. Soc. Psychol.* **94**, 91–107 (2008).
80. L. Cosmides, J. Tooby, R. Kurzban, Perceptions of race. *Trends Cogn. Sci.* **7**, 173–179 (2003).
81. C. Stangor, L. Lynch, C. Duan, B. Glas, Categorization of individuals on the basis of multiple social features. *J. Pers. Soc. Psychol.* **62**, 207–218 (1992).
82. A. G. Greenwald, M. R. Banaji, Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychol. Rev.* **102**, 4–27 (1995).
83. S. T. Fiske, S. E. Taylor, *Social Cognition: From Brains to Culture* (Sage, 2013).
84. T. A. Ito, G. R. Urland, Race and gender on the brain: Electrocortical measures of attention to the race and gender of multiply categorizable individuals. *J. Pers. Soc. Psychol.* **85**, 616–626 (2003).
85. A. Agan, S. Starr, Ban the box, criminal records, and racial discrimination: A field experiment. *Q. J. Econ.* **133**, 191–235 (2017).
86. P. Oreopoulos, Why do skilled immigrants struggle in the labor market? A field experiment with thirteen thousand resumes. *Am. Econ. J. Econ. Pol.* **3**, 148–171 (2011).
87. K. L. Milkman, M. Akinola, D. Chugh, What happens before? A field experiment exploring how pay and representation differentially shape bias on the pathway into organizations. *J. Appl. Psychol.* **100**, 1678–1712 (2015).
88. S. M. Gaddis, *Audit Studies: Behind the Scenes with Theory, Method, and Nuance* (Springer, 2018), vol. 14.
89. J. Cohen, Statistical power analysis. *Curr. Directions Psychol. Sci.* **1**, 98 (1992).
90. D. J. Hauser, P. C. Ellsworth, R. Gonzalez, Are manipulation checks necessary? *Front. Psychol.* **9**, 998 (2018).

**Acknowledgments:** This research has been conceived through conversations with many colleagues, including X. Zhou, J. Xu, D. Rand, G. Bolton, E. Bertschinger, M. Bernard, and D. Balliet. We value the questions and comments of A. Agan, M. Akinola, M. Boyarskaya, B. Boykin, P. Carter, J. Gallus, R. Kurzban, N. Levina, J. McBride, A. Nemkova, K. Phillips, and O. Schilke. We are especially grateful for conversations with S. James Gates, Jr., D. J. Gross, T. Hodapp, J. Hollenhorst, and V. F. Incera during the 2019 retreat of the American Physical Society at the Kavli Institute for Theoretical Physics. In addition, for exchanges with J. Flory, Y. Gallen, J. Kessler, J. List, D. L. Loyd, and N. Rajendra at the Science of Diversity and Inclusion at University of Chicago. We are thankful to those who commented on early drafts, including K. Böhm, C. Canca, E. Esposito, G. Formilan, K. Hyndman, S. Khan, J. Lee, F. Mauersberger, F. Portocarrero, S. Portocarerro, S. Siegenthaler, and H. Spamann. N. Kolundzic contributed the illustrations. Our research benefited from comments at faculty seminars at The Rotterdam School of Management at Erasmus University and the Jindal School of Management at the University of Texas in Dallas. We also benefited from comments at conferences: The Science of Diversity and Inclusion at the University of Chicago; People and Organizations at the Wharton School of the University of Pennsylvania; Collective Intelligence at Carnegie Mellon University; The Society for the Advancement of Socio-Economics at the New School; EGOS and Organization Studies in Kyoto, Japan; The Economic Science Association in Marina del Rey, California and Vancouver; The Collier Conference on Behavioral Economics at Tel Aviv University; and the Texas Experimental Association Symposium at Baylor University. **Funding:** S.S.L. and D.S. are grateful for the collegiality and funding of the Jindal School of Management at University of Texas at Dallas and the Institute for Social and Economic Research and Policy (ISERP) at Columbia University in the City of New York. S.S.L. is thankful for an appointment at the latter. D.S. acknowledges a grant from the European Research Council, agreement no. 695256. **Author contributions:** S.S.L., C.R., and D.S. designed the studies, which were conducted and analyzed by S.S.L. and C.R. S.S.L. and D.S. wrote the manuscript. **Competing interests:** The authors declare that they have no competing interests. **Data and materials availability:** All data needed to evaluate the conclusions in the paper are present in the manuscript, Supplementary Materials, and/or deposited with the Open Science Framework (<https://j.mp/OSFRacialAttentionDeficit>).

Submitted 15 February 2021  
Accepted 17 June 2021  
Published 17 September 2021  
10.1126/sciadv.abg9508

**Citation:** S. S. Levine, C. Reypens, D. Stark, Racial attention deficit. *Sci. Adv.* **7**, eabg9508 (2021).

## Racial attention deficit

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*Sci. Adv.*, 7 (38), eabg9508. • DOI: 10.1126/sciadv.abg9508

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